

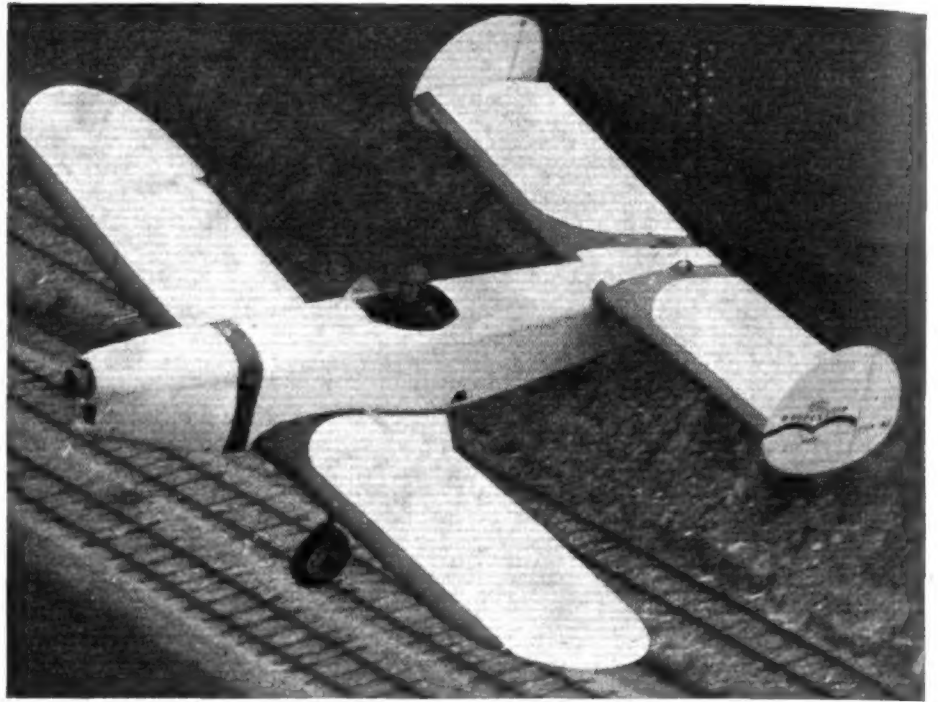
REVIVING the TANDEM

An Interesting French Experiment : Lateral Control transferred to Rear Wing : Flaps on Front Wing

EVEN in the early days of flying the tandem arrangement of aerofoils was thoroughly tested by the late M. Gustave Eiffel in his wind tunnels. Relatively poor efficiency seemed to accompany any possible arrangement of the wings, and for many years no practical development of full-scale aeroplanes with tandem wings took place.

Then came the glider competition at Itford Hill and Firle Beacon, near Lewes, in Sussex, at which the greatest duration was established by M. Maneyrol, a French pilot, on a French Peyret tandem glider in which both wings were provided with ailerons so interconnected that they could be used both as elevators and as ailerons. The British gliders taking part in the meeting suffered from inadequate control, whereas the Peyret had ample control, and thus enabled Maneyrol to manoeuvre so as to remain in the up-currents from Firle Beacon for 3 hours 21 minutes 7 seconds.

M. Louis Peyret, encouraged by his success, struggled along in an endeavour to develop the tandem aeroplane, but without much success, mainly through lack of capital. Now another French constructor has taken up the development of the tandem machine, but has approached the subject in a somewhat different way. The Mauboussin



The Mauboussin "Hemiptere" in flight.

"Hemiptere" is, presumably, so-called because of its resemblance to the hemiptera family of insects, which have four wings, one pair of which is partly coriaceous, or leathery and tough, and partly membranous.

M. Mauboussin, as already mentioned, has approached the problems of the tandem aeroplane from a different angle. Arguing that if one has a tandem arrangement of the wings, and the c.g. is properly located, the front wing will stall first, putting the machine into a dive before it can go into a spin. If, therefore, the ailerons are transferred from the front to the rear wing, one should have adequate lateral control on the unstalled wing; and even if the front wing should have a slight tendency to spin it will be prevented by the unstalled and fully controlled rear wing from dragging the machine as a whole into a spin.

The fundamental design of the Mauboussin "Hemiptere" (writes R. C. Wood, our Paris correspondent) involves front and rear wings of different aerofoil sections, and arranged with the rear wing mounted on top of the fuselage, while the front wing is attached to the bottom of the fuselage. There is a decalage of three degrees, as the front wing is at an angle of 3 degrees when the rear wing is at 0 deg. incidence. In other words, the arrangement is that of a heavy *negative* stagger, the distance between the front and rear wing being equal to the chord of the front

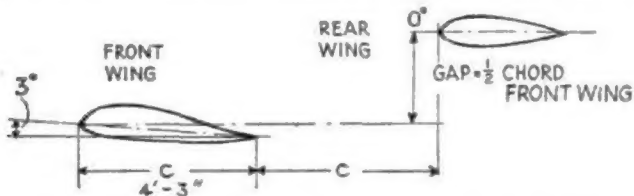


Diagram of wing arrangement in the "Hemiptere."

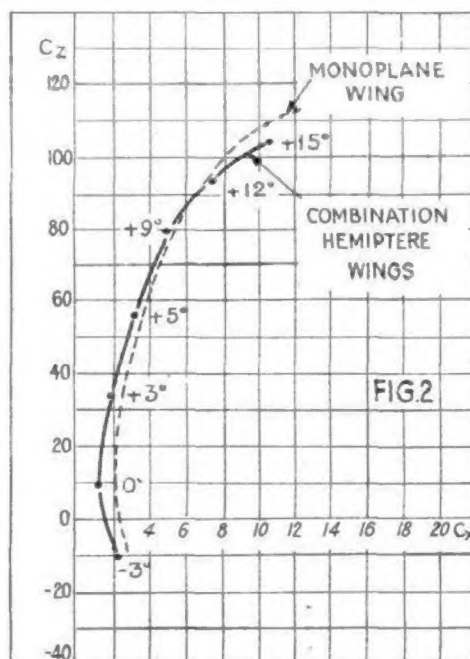
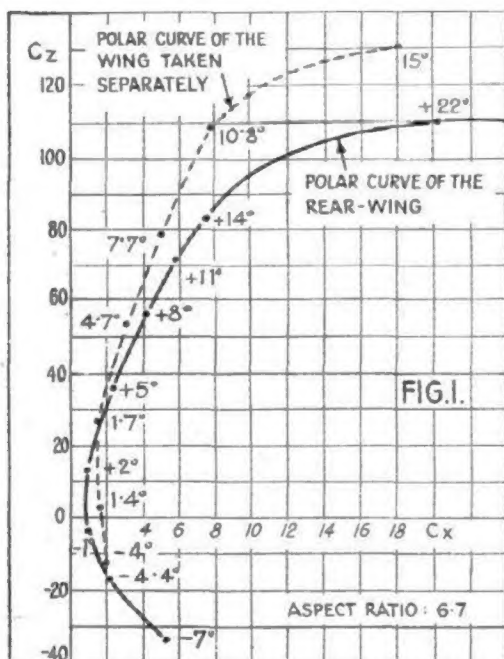


Fig. 1. A polar diagram of the rear wing by itself and of the same wing when influenced by the front wing.

Fig. 2. The tandem wing compared with a monoplane wing. The units are, of course, Continental, and should be divided by 200 to convert them into British "absolute" units.